

Revisiting electroweak phase transitions in SM with a singlet scalar: gauge artifact issue

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First-order electroweak phase transition plays a central role in electroweak baryogenesis. However, it is known that unwanted gauge dependence exists in critical temperature and Higgs vacuum expectation value in an ordinary perturbative calculation scheme. In this talk, we revisit the electroweak phase transition in the SM with a singlet scalar utilizing a gauge-independent method proposed by Patel and Ramsey-Musolf and make a comparison with previous results. Impact on deviation of triple Higgs coupling from the standard model is also discussed.

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